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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PHILLIP C. CAGLE

Appeal 2011-001684
Application 10/772,792
Technology Center 1700

Before EDWARD C. KIMLIN, ADRIENE LEPIANE HANLON, and
CHUNG K. PAK, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 12-16, 18, 23, 25-30, 32, 37, and 39-44. We have jurisdiction under 35 U.S.C. § 6(b).

Claim 12 is illustrative:

12. A system for printing images, comprising:

a) an ink-jet ink, including:

i) an aqueous liquid vehicle having at least one volatile co-solvent, each volatile co-solvent present having a boiling point at or

below about 285°C, wherein the total amount of volatile co-solvent present in the ink-jet ink is from 5 wt% to 50 wt%,

- ii) acid-functionalized polymer colloid particulates dispersed in the liquid vehicle, said acid-functionalized polymer colloid particulates including surface acid groups, said surface acid groups provided by acid monomers copolymerized with other monomers to form the polymer colloid particulates, said acid monomers being present at from 1 wt% to 15 wt% of total monomers used to form the polymer colloid particulates, and
- iii) polymer-encapsulated pigment colorants dispersed in the liquid vehicle;

b) a thermal ink-jet printhead configured for printing ink-jet ink;

c) a non-porous substrate configured for receiving the ink-jet ink upon printing with the ink-jet printhead; and

d) a heating element configured for heating the image once it is printed on the non-porous substrate.

The Examiner relies upon the following references in the rejection of the appealed claims (Ans. 3):

Moffatt	5,207,824	May 4, 1993
Kato	6,536,890 B1	Mar. 25, 2003
Kubota	2003/0069329 A1	Apr. 10, 2003
Miyamoto	2004/0055508 A1	Mar. 25, 2004
Wang	2004/0063807 A1	Apr. 01, 2004
Miyabayashi	2004/0229974 A1	Nov. 18, 2004

Hawley's Condensed Chemical Dictionary 459, 470 (Richard J. Lewis Sr. rev., John Wiley & Sons 13th ed., 1997).

Appellant's claimed invention is directed to a system and method for printing images using a thermal ink-jet printhead with an ink comprising an aqueous liquid vehicle, acid functionalized polymer colloid particulates

dispersed in the vehicle, volatile and non-volatile co-solvents, and polymer-encapsulated pigments that are dispersed in the liquid vehicle.

Appealed claims 13, 14, 27 and 28 stand rejected under 35 U.S.C. § 112, first paragraph, written description requirement. Claims 12, 13, 15, 16, 23, 25-27, 29-30, 37, and 39-44 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Wang. In addition, the appealed claims stand rejected under 35 U.S.C. § 103(a) as follows:

- (a) Claims 12-16, 23, 25-30, 37, and 39-44 over Wang,
- (b) Claims 12-16, 18, 23, 25-30, 32, 37 and 39-44 over Wang in view of Miyabayashi,
- (c) Claims 12-15, 18, 23, 25-29, 32, 37 and 39-44 over Kubota in view of Hawley's Condensed Chemical Dictionary and either Kato or Moffatt, and
- (d) Claims 12-16, 18, 23, 25-30, 32, 37 and 39-44 over Kubota in view of Hawley's Condensed Chemical Dictionary and either Kato or Moffatt further in view of Miyamoto.

We have thoroughly reviewed the respective positions advanced by Appellant and the Examiner. In so doing, we find that the Examiner's rejection under § 112, first paragraph, is not well founded. However, we are in complete agreement with the Examiner that the claimed subject matter is unpatentable over the cited prior art for essentially the reasons expressed in the Answer.

We consider first the Examiner's rejection under § 112, first paragraph, of claims 13, 14, 27 and 28. It is the Examiner's position that Appellant's Specification does not provide original descriptive support for the claimed amounts of non-volatile co-solvent, namely, "from 0.1 wt% to

10 wt%” and “from 0.1 wt% to 2 wt%”. However, while we agree with the Examiner that the Specification does not explicitly recite the claimed ranges for the non-volatile co-solvent, we concur with Appellant that the paragraph bridging pages 5-6 of the Specification fairly describes the claimed ranges to one of ordinary skill in the art. In particular, the relevant paragraph includes the following:

Concentrations, amounts, and other numerical data may be expressed or presented herein in a range format. It is to be understood that such a range format is used for convenience and brevity, and thus, should be interpreted in a flexible manner to include not only the numerical values explicitly recited as the limits of the range, but also to include all the individual numerical values or sub-ranges encompassed within that range as if each numerical value and sub-range is explicitly recited.

Original claim 13 recites “no more than 10 wt% of non-volatile co-solvents”, and original claim 14 recites “no more than 2 wt% of non-volatile co-solvents”. Accordingly, based on the Specification passage quoted above, original claims 13 and 14 provide descriptive support for the presently claimed ranges of “0.1 wt% to 10 wt%” (claim 13) and “from 0.1 wt% to 2 wt%” (claim 14).

We will sustain the Examiner’s rejection of the appealed claims based on Wang to the extent they are under § 103.¹ There is no dispute that Wang, like Appellant, discloses a system for printing images using a thermal ink-jet printhead and an ink that may comprise an aqueous liquid, volatile and non-volatile co-solvents, acid-functionalized polymer colloid particulates having

¹ We will not sustain the rejection of claims 12, 13, 15, 16, 23, 25-27, 29, 30, 37, and 39-44 under 35 U.S.C. § 102(e) as being anticipated by Wang.

surface acid groups, and polymer-encapsulated pigment colorants. Wang discloses that the printed image may be heated after printing ([0054]).

Appellant acknowledges that Wang discloses hydrophilic monomers and acidic monomers but contends that Wang fails to recognize the difference between the two classes of monomers. However, such a recognition is not necessary to support a rejection under § 103. As pointed out by the Examiner, Wang clearly teaches the claimed acidic monomers as particular types of hydrophilic monomers that may be used in the ink composition, and Appellant has not set forth why it would have been non-obvious for one of ordinary skill in the art to select the acidic monomers expressly taught by Wang for the ink composition.

Appellant also maintains that although Wang generally teaches the use of encapsulated pigments, Wang's list of specific individual pigments in paragraph [0029] does not include encapsulated pigments. However, we agree with the Examiner that such an omission does not negate the express teaching of Wang that encapsulated pigments may be used in the ink composition. Appellant has advanced no reason why it would have been non-obvious for one of ordinary skill in the art to select an encapsulated pigment in Wang's ink composition, as clearly taught by Wang. As noted by the Examiner, it is not necessary for a finding of obviousness that the reference exemplifies all its disclosed embodiments.

We are not persuaded by Appellant's argument that

reasons of achieving good rub resistance, good waterfastness, lightfastness, abrasion resistance, good adhesion to non-absorbing substrates, or any other quality disclosed in Wang, could not be a reason to combine a latex monomer with an acidic monomer of 1 wt % to 15 wt% with encapsulated

pigment since Wang already claims to accomplish this with non-acidic latexes and non-encapsulated pigments.

(App. Br. sentence bridging 28-29). As noted by the Examiner, Wang also teaches that these benefits may be achieved with acidic latexes and encapsulated pigments. Appellant has advanced no reason why it would have non-obvious for one of ordinary skill in the art to select the acidic latexes and encapsulated pigments taught by Wang to achieve the benefits taught in the reference.

Regarding separately argued claims 41 through 44 which recite the density and surface dielectric constant for the acid-functionalized polymer colloid particulates, we agree with the Examiner that, since Wang teaches the use of Appellant's acid-functionalized polymer colloid particulates, it is reasonable to conclude that the particulates of Wang would possess the claimed density and dielectric constant. Appellant has apprised us of no reasoning to the contrary other than the argument that Wang does not exemplify the claimed ink composition.

As for the claimed amounts of non-volatile co-solvent recited in claims 14 and 28, we agree with the Examiner that Wang's teaching at paragraph [0045] encompasses the claimed amounts. Moreover, it is well settled that where patentability is predicated upon a change in a condition of a prior art composition, such as a change in concentration or the like, the burden is on the applicant to prove with objective evidence that the change is critical, i.e., it leads to a new, unexpected result. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). In the present case, Appellant has proffered no argument, let alone the

requisite objective evidence, that the claimed amount of non-volatile co-solvent achieves an unexpected result.

Appellant does not present a separate, substantive argument against the § 103 rejection of Wang in view of Miyabayashi.

We will also sustain the Examiner's § 103 rejection of the appealed claims over Kubota in view of either Kato or Moffatt for essentially those reasons expressed in the Answer. There is no dispute that Kubota, like Appellant, discloses a system for printing images using an ink-jet ink comprising an aqueous liquid vehicle and a volatile co-solvent, acid-functionalized polymer colloid particulates, and polymer-encapsulated pigments. Appellant emphasizes that Kubota does not teach the use of the claimed thermal ink-jet printhead, and it is known in the art that inks suitable for piezo inkjet printers are not always suitable for thermal ink-jet printers. However, as correctly set forth by the Examiner, Kubota teaches that the disclosed ink compositions are suitable for ink-jet printers, in general, which would have been reasonably interpreted by one of ordinary skill in the art as including both piezo and thermal ink-jet printers. Kubota provides no teaching that the disclosed ink compositions are not suitable for thermal ink-jet printing, and Appellant has presented no reason why one of ordinary skill in the art would have found it non-obvious to use the ink-jet inks of Kubota in a thermal ink-jet printer. As explained by the Examiner, since there are only two types of printheads, piezo and thermal, it is reasonable to conclude that Kubota's failure to specify either type would have suggested that the disclosed ink compositions were suitable for both types of printing.

The remaining arguments presented by Appellant have been adequately answered by the Examiner.

As a final point, we note that Appellant bases no argument upon objective evidence of non-obviousness, such as unexpected results.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. §1.136(a)(1)(iv).

AFFIRMED

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